Annual Report

The surveillance programme for pancreas disease (PD) in 2017

Veterinærinstituttet
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Mattilsynet

The surveillance programme for pancreas disease (PD) in 2017

Content

Authors
Britt Bang Jensen, Anne-Gerd Gjevre

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Summary

Salmonid alphavirus (SAV), the etiological agent of pancreas disease (PD), was detected in three farms in Nordland and one farm in Nord-Trøndelag during the surveillance programme in January to August 2017. After the enforcement of a new regulation, all farms will be tested for SAV, and SAV was thus detected in 130 farms inside the PD-zone and 12 farms in the control zone in 2017.

Introduction

Pancreas disease (PD) is a contagious disease in salmonid fish caused by salmonid alphavirus (SAV). PD caused by SAV3 has since 2003 been endemic along the west coast of Norway north to Hustadvika in Møre og Romsdal (the SAV3 endemic zone). In 2007 PD became a national notifiable disease (list 3) and the Norwegian Food Safety Authorities (NFSA) established national regulations in order to handle the disease (1, 2). In 2010 PD caused by SAV2 was for the first time detected in a farm with Atlantic salmon in Mid Norway. In 2012 a SAV2 endemic zone from Hustadvika to the border between Sør-Trøndelag and Nord-Trøndelag was established, with an observation zone covering the coast of Nord-Trøndelag (2). In 2017, the two previous regulations were replaced by a national regulation controlling PD in the entire country. In the regulation from 2017, a PD zone is defined in an area stretching from Jæren in the south, to the former border between the counties South- and North Trøndelag in the north. The rest of the coastline makes up a control zone stretching on both sides of the PD-zone to the Swedish border in the south and the Russian border in the north (3).

Because of a few outbreaks that occurred north of the PD-zone, the NFSA adopted a control zone for PD in the municipalities of Flatanger, Fosnes og Namsos, Nærøy, Vikna, Leka, Bindal, Brønnøy og Sømna in the counties North Trøndelag and Nordland in 2017 (4).

In 2017 PD was diagnosed or suspected in a total of 176 fish farms (5).

Aims

In 2014 the NFSA decided to establish a new surveillance programme for PD in the four northern counties (Nord-Trøndelag, Nordland, Troms and Finnmark).

The aim of the programme was to monitor the occurrence of SAV in SAV-free regions in the northern part of Norway in order to obtain a PD-free status in this part of the country. The surveillance programme was terminated in 2017, as a consequence of the new legislation.

Materials and methods

The 2017 surveillance programme for PD was from January until August based on sampling of farmed fish from three defined areas (Figure 1). Surveillance zone 1 included all farms in Nord-Trøndelag that were screened for SAV according to national regulations. Surveillance zones 2 and 3 included all farms in a 20 km zone around two sites in Nordland diagnosed with PD in 2016.

In all three zones sampling was done by the fish farmers according to regulations given by the NFSA (2). At each site 30 fish was to be sampled twice during 2017. Sampling of moribund and newly dead fish was emphasised. Sampling should also be done if fish was transported through a SAV-positive area into the surveillance zone.

Samples (apex of heart) received on RNAlater™ were processed and analysed for SAV by real-time RT-PCR at PatoGen Analyse AS and Labora AS.

The new legislation that was implemented in September 2017, stated that all salmonid fish farms that uses untreated seawater and which have not yet been diagnosed with PD or found positive for SAV must sample 20 fish each month and send them for analysis for SAV by PCR at an accredited laboratory. Further, all cleaner fish and salmonid fish that is to be moved from one farm to another, must submit samples of 60 fish for testing for SAV. All results of this testing must be reported to the national reference laboratory (NRL; The Norwegian Veterinary Institute). Samples should include the apex of the heart, and be sent on RNAlater™ to be processed and analysed for SAV by real-time RT-PCR. All samples positive of SAV must be subtyped and the results reported to the NRL.

Results and Discussion

Results from the surveillance programme

Fish samples submitted to the surveillance programme come from 55 farms with Atlantic salmon. Some of the farms were not situated inside any of the surveillance zones. (Table 1 and Figure 1)

Table 1. Number of samples from fish investigated for SAV in the surveillance programme in 2017.

Species	Number of farms sampled		Number of samples		Positive sites
	Within the surveillance Zones (1-3)	Outside of the surveillance zones	Within the surveillance Zones (1-3)	Outside of the surveillance zones	
Atlantic salmon	13	42	854	4 362	4

A total of four farms north of the PD endemic zones tested positive for SAV in the surveillance programme, one of them in Nord-Trøndelag and tree in Nordland (Figure 1).

Results from the testing according to new legislation

In 2017, the number of active farms, farms tested and number of farms positive for SAV in the screening program is presented in Table 2 (hatcheries) and Table 3 (sea farms). Active seawater farms are defined as farms stocking fish for at least 3 months in 2017. Number of licensed hatcheries is the number of licensed freshwater farms in 2017 –disregarding what species they are farming or whether they are using untreated seawater. Some freshwater farms are licensed for both salmonids and cleaner fish, and thus included twice.

Table 2. Results from the testing of hatcheries in the screening programme for SAV in 2017.

Species	Hatcheries		
	Number of farms tested	Number of licensed farms	Farms positive for SAV
Within PD-Zone			
Salmonid fish	32	139	2 (1 SAV3, 1 unknown subtype)
Cleaner fish	6	31	0
Total	38	170	2
Outside PD-Zone			
Salmonid fish	23	82	0
Cleaner fish	7	21	0
Total	30	103	0
Total for country	**68**	**273**	**2**

Table 2. Results from the testing of sea farms in the screening programme for SAV in 2017.

Production zone	Sea farms					
	Number of farms tested	Number of active farms	Farms positive for SAV			
			SAV2	SAV3	Unknown subtype	Total
Within PD-Zone						
2	37	43	0	5	14	19
3	90	132	0	4	24	28
4	87	117	0	16	19	35
5	24	35	1	4	2	7
6	82	116	27	0	14	41
Total	320	443	28	29	73	130
Outside PD-Zone						
1	8	13	0	0	0	0
7	42	48	10	0	2	12
8	64	76	0	0	0	0
9	51	70	0	0	0	0
10	30	53	0	0	0	0
11	23	34	0	0	0	0
12	44	50	0	0	0	0
13	4	4	0	0	0	0
Total	266	348	10	0	2	12
Total for country	**586***	**791**	**38**	**29**	**75**	**142**

*Includes 4 farms with cleaner fish

The locations of the farms screened and the results are showed in Figure 2.

Not all active farms were tested for SAV in 2017. This can be because they had already been diagnosed with PD, or because they were already empty at the time when the legislation was enforced.

A considerable proportion of the SAV-findings have not been subtyped. Some were diagnosed before the legislation was enforced, but a large number that should have been subtyped remain. However, there are no indications that the distribution of the two subtypes have changed from previous years.

From 2018, all farms with salmonids will be tested for SAV once a month, so a complete overview of the distribution of the virus will be obtained within this year.

References

1. National regulation 2007-11-20 nr.1315

2. National regulation 2012-11-06 nr. 1056

3. National regulation 2017-08-29 nr. 1318

4. National regulation 2017-12-15 nr 2096

5. Hjeltnes, B., Bang Jensen, B., Bornø, G., Haukaas, A., Walde, C. (red), Fiskehelserapporten 2017, Veterinærinstituttet 2018

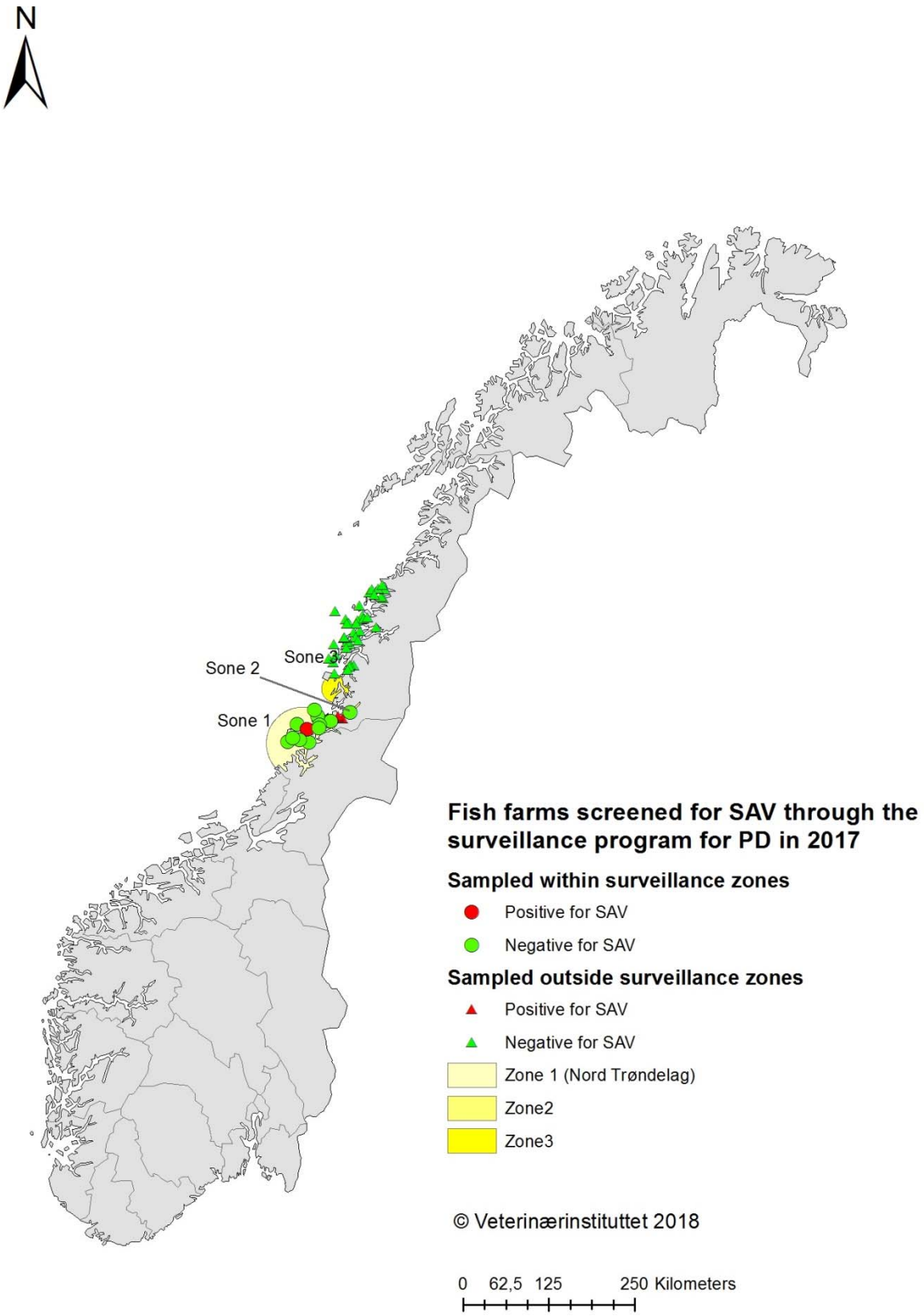

Figure 1. Map of farms sampled for the 2017 SAV surveillance programme.

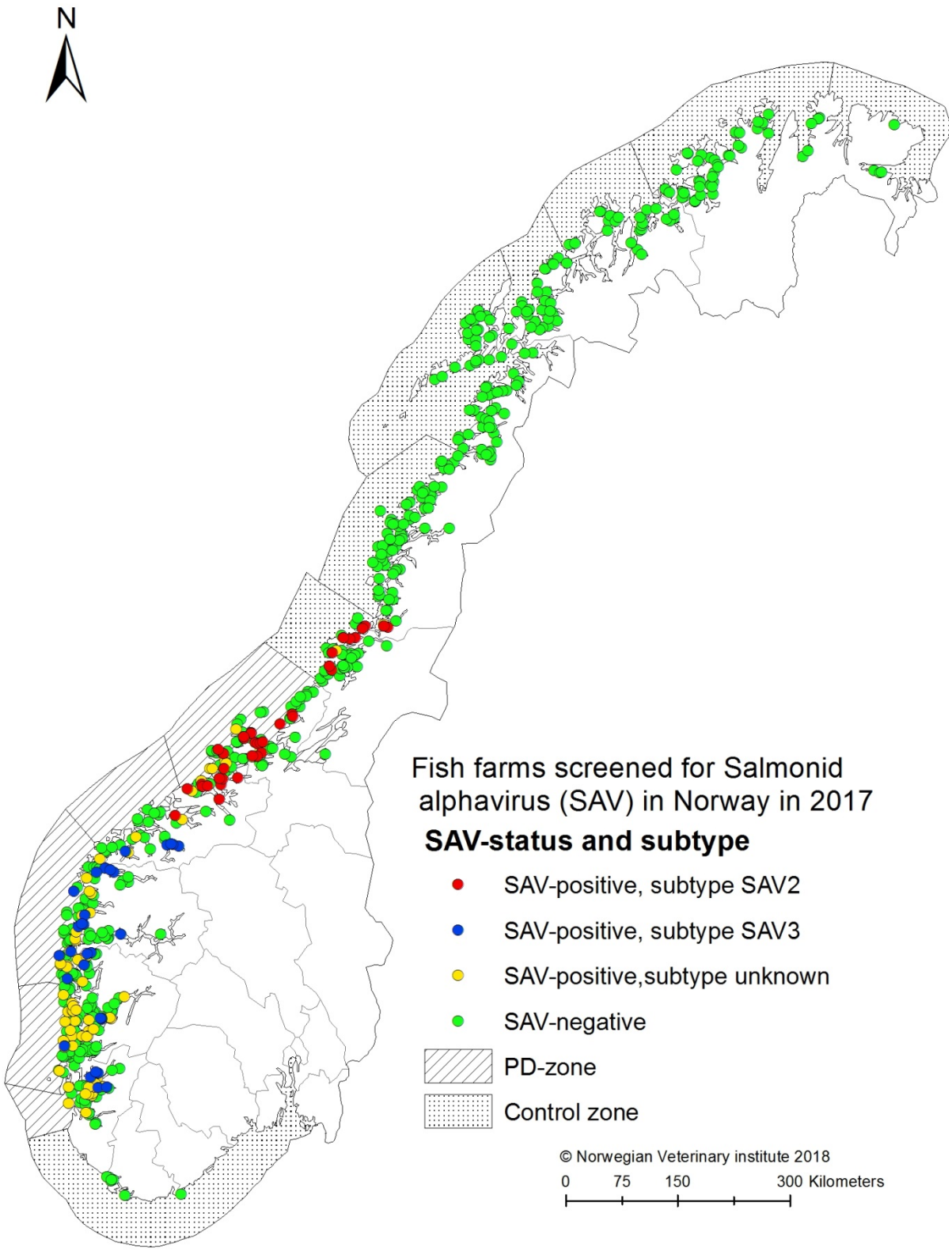

Figure 2. Map showing the fish farms that were screened for SAV in 2017, and the results of the screening.

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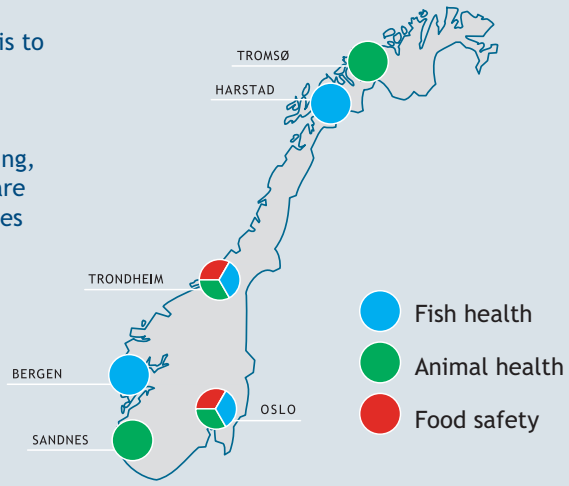

Fish health

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Oslo	Trondheim	Sandnes	Bergen	Harstad	Tromsø
postmottak@vetinst.no	vit@vetinst.no	vis@vetinst.no	post.vib@vetinst.no	vih@vetinst.no	vitr@vetinst.no

www.vetinst.no

Veterinærinstituttet
Norwegian Veterinary Institute